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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Peyravian *et al.*

Serial No.: **09/458,928**

Filed: December 10, 1999

For: **TIME STAMPING METHOD USING AGED TIME STAMP RECEIPTS**

Attorney's Docket No: 4541-002

Examiner: Dada, Beemnet W.

Group Art Unit: 2135

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APPEAL BRIEF

This Appeal Brief is being submitted not more than two months after the Patent Office received the Notice of Appeal (February 11, 2005). As such, no extension of time fees should be due. The Commissioner is authorized to charge the requisite fee pursuant to 37 C.F.R. §41.20 and any additional fees required to IBM's Deposit Account No. 09/0461.

(1) REAL PARTY IN INTEREST

The real party in interest is IBM Corp., the assignee of the present invention.

(2) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences to the best of Applicants' knowledge.

(3) STATUS OF CLAIMS

A total of twenty-six (26) claims number 1-26 have been presented for examination, all of which are pending. All claims 1-26 stand rejected by the Examiner. Accordingly, Applicants appeal the rejection of claims 1-26.

(4) STATUS OF AMENDMENTS

There have been no amendments.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to a time-stamping protocol for time-stamping digital documents so that a date that the document was created may be verified. The method of the present invention presumes the existence of a trusted outside agency referred to herein as the time stamping authority (TSA). *Spec*,. p. 4, ll. 1-4.

According to the present invention, a document originator, such as an author, creates a time stamp receipt by combining a document or identifying data associated with the document and a time indication. The identifying data may be any digital data derived from or associated with the document such as, for example, a unique digital sequence derived from the application of a one-way hash function. *Spec.*, p. 6, ln. 10 – p. 7, ln. 3. The document originator forwards the time stamp receipt to the TSA for validation. *Spec.*, p. 7, ll. 4-6. If the TSA determines the time stamp receipt to be valid, the TSA computes an age value by determining the difference between the time indication in the time stamp receipt and the time obtained from a trusted clock. *Spec.*, p. 7, ll. 6-22. The TSA then combines the age value with the identifying data and the time indication to create an aged time stamp receipt. *Spec.*, p. 7, ln. 24 – p. 8, ln. 9. After creating the aged time stamp receipt, the TSA cryptographically binds both the received time indication and the computed age value with the document or identifying data using, for example, a private key. *Spec.*, p. 8, ln. 10 – p. 9, ln. 4. A copy of the bound time stamp receipt is then

sent to the document originator, and may later be used to verify the document. *Spec.*, p. 9, ll. 21 – p. 11, ln. 2.

(6) GROUNDS OF REJECTION

The Examiner rejected claims 1-10, 13-23, and 26 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,530,023 to Nissl et. al. (hereinafter "Nissl") in view of U.S. Patent No. 5,136,647 to Haber et. al. (hereinafter "Haber") and in further view of U.S. Patent No. 5,638,443 to Stefik et. al. (hereinafter "Stefik").

(7) ARGUMENTS RELATING TO THE §103(a) GROUND OF REJECTION

A. The patents to Nissl, Haber, and Stefik fail to teach or suggest, alone or in combination, claims 1-26.

Claim 1

Claim 1 is directed to a method for time-stamping a digital document at a trusted outside agency. For reference, claim 1 appears below.

> 1. A method for time stamping a document comprising:
> receiving a time stamp receipt at an outside agency, said time stamp receipt including identifying data associated with said document and a time indication;
> computing the age of said time stamp receipt based on said time indication;
> creating an aged time stamp receipt at said outside agency by combining said identifying data, said time indication and said computed age; and
> binding at said outside agency said identifying data, said time indication, and a digital representation of said age using a cryptographic binding scheme to create an aged time stamp receipt.

According to claim 1, the outside agency receives a time-stamp receipt, and computes the age of a time stamp receipt based on a time indication received with the time stamp receipt. This computation yields a computed age value that is then used by the outside agency, along with the identifying data and the originally received time indication, to create another, aged time-

stamp receipt. None of the references cited by the Examiner teach or suggest, alone or in combination, computing an age value based on a time indication received in a first time-stamp receipt, and using the computed age value and the received time indication to create a subsequent aged time-stamp receipt.

The Nissl approach discloses a method of validating a proposed absolute time for use in a time stamp that is sent to a receiving device. More specifically, a transmitting device determines two time values - a "standard time" derived from an external clock signal (e.g., a DCF77 signal transmitted in the Federal Republic of Germany), and a current time provided by an internal clock. The transmitting device computes a difference between these two times and, provided the computed difference falls within a predetermined tolerance range (i.e., the two times are substantially similar to one another), the transmitting device incorporates the standard time value into the time stamp, and updates its internal clock. The time-stamped message may then be sent to the receiving device. *Nissl*, col. 6, ll. 3-24; *see also*, col 7, ll. 13-41.

This approach deviates markedly from claim 1. In Nissl, the transmitting device - not a receiving outside agency - generates the time-stamp. The time-stamp incorporates only an absolute time (i.e., the standard time) that is derived from an external broadcast source. The time upon which the computation is based is not a time indication received in a time-stamp receipt. Once the computation is complete, Nissl never suggests incorporating both the standard time and the computed difference into an aged time-stamp receipt as recited in claim 1. This is not surprising, as any time difference in Nissl is used only to synchronize the internal clock of the transmitting device, and to determine whether the transmitting device should time-stamp a message to be transmitted with the standard time. It is not used to determine the age of the time stamp receipt. The receiving device of Nissl also fails to incorporate a computed time difference into a time-stamp upon receipt of the time-stamped message and in fact, never computes a time difference based on a received time indication. If the receiving device computes a time difference at all, it is only when it acts as a transmitting device, and is based

only on a time derived from the external broadcast source. Nissl does not teach or suggest computing a time difference between a time indication in a received time-stamp and a time provided by an internal clock, and using the computed difference along with the received time indication to create a subsequent, aged time stamp receipt.

Haber also fails to teach or suggest an outside agency computing an age value from a time indication received in a first time-stamp receipt, and using the computed age value and the received time indication to create a subsequent time-stamp receipt. According to Haber, a document author requests a time-stamp receipt from a trusted outside agency. Upon receipt, the trusted agency creates the time-stamp receipt by concatenating the information received in the request with additional information including one or more time indications. The trusted outside agency, one or more independent agents or witnesses, or both may add the time indications to the time-stamp receipt.

However, the trusted outside agency in Haber *never* receives a time indication in the original request from the requestor (e.g., the document author). According to Haber, the outside agency receives only the identity of the author/requestor, and a hash value associated with the document. Even when the time indications are added, which according to Haber occur only after receipt by the trusted outside agency (*e.g., Haber*, col. 6, ll. 8-24), the trusted agency never computes a time difference. Rather, the trusted agency time-stamps the document with a sequence of absolute times that include the current time and one or more times representing the receipt times of documents received both before and after the document currently being time-stamped. According to Haber, this sequentially fixes the document being time-stamped in a continuum of time. *Haber*, col. 4, ll. 3-33. Thus, Haber never needs to compute the age of the time-stamp receipt. Haber never suggests that any of the times used to create the sequence include computed time differences, but in fact, explicitly defines the various receipt times as absolute times of receipt. *E.g., Haber*, col. 6, ll. 19-23; *see also*, col. 4, ll. 51-61.

The trusted agency in Haber does receive a time indication in an embodiment that employs one or more randomly selected independent witnesses to verify the document. Notably, however, neither the trusted outside agency nor any of the independent agents compute a time difference between any of the time indications in the time-stamp receipt and a current time obtained from a trusted clock. Rather, the times added are absolute as described above. *Haber*, col. 8, ll. 17-25. Because Haber fails to teach or suggest computing a time difference, Haber necessarily fails to teach or suggest computing an age value based on a time indication received in a first time-stamp receipt, and using the computed age value and the received time indication to create a subsequent aged time-stamp receipt.

Finally, the Examiner adds Stefik in an attempt to show that time difference computations are known. However, not only does Stefik fail to teach or suggest computing an age value from a time indication received in a first time-stamp receipt, and using the computed age value and the received time indication to create a subsequent aged time-stamp receipt, it is unrelated to the claimed invention. Specifically, Stefik discloses a repository system for managing, maintaining, and controlling digital works. Transactions in the system may be based, in part, on time-stamps generated by various parts of the system. In one transaction (i.e., clock synchronization), Stefik computes a time delta between two absolute times. However, the fact that Stefik may compute a delta between two times is inapposite to claim 1.

> After the session information is exchanged, the repositories must synchronize their clocks. Clock synchronization is used by the repositories to establish an agreed upon time base for the financial records of their mutual transactions. Referring back to FIG. 17, repository-2 initiates clock synchronization by generating a time stamp exchange message, step 1705, and transmits it to repository-1, step 1706. Upon receipt, repository-1 generates its own time stamp message, step 1707 and transmits it back to repository-2, step 1708. Repository-2 notes the current time, step 1709 and stores the time received from repository-1, step 1710. The current time is compared to the time received from repository-1, step 1711. The difference is then checked to see if it exceeds a predetermined tolerance (e.g. one minute), step 1712. If it does, repository-2 terminates the transaction as this may indicate tampering with the repository, step 1713. If not repository-2 computes an adjusted time delta, step 1714. The adjusted time delta is the difference between the clock time of repository-2 and the average of the times from repository-1 and repository-2.

Stefik, col. 28, ln. 66 – col. 29, ll. 17 (emphasis added).

This passage – the same passage cited by the Examiner to support the rejection - discloses only that the system of Stefik can obtain a time difference between two different time indications. Stefik simply analyzes the computed difference and aborts a synchronization transaction if the difference falls outside of a predetermined tolerance. This says nothing about time stamp generation using the computed difference as recited in claim 1, and Stefik never suggests using the computed time difference as such. Stefik does not teach or suggest computing an age value from a time indication received in a time-stamp receipt, and then using the computed age value and the received time indication to create a subsequent aged time-stamp receipt.

Therefore, none of Nissl, Haber, or Stefik alone or in combination teach or suggest computing an age value from a time indication received in a time-stamp receipt, and then using the computed age value and the received time indication to create a subsequent time-stamp receipt. Additionally, because none of the references, alone or in combination, teach or suggest creating the requisite aged time-stamp receipt of claim 1, they necessarily cannot teach or suggest, alone or in combination binding the aged time stamp receipt as recited in claim 1. As such, none of the references teach or suggest, alone or in combination, each and every element of claim 1. Accordingly, the §103 rejection fails as a matter of law.

However, the § 103 rejection also fails for at least an additional reason. Specifically, the Examiner has failed to put forth a legally sufficient motivation to combine the references. In the Office Action, the Examiner asserts that it would be obvious to combine Nissl, Haber, and Steffik because the "combination would have provided a means of synchronizing between different clocks and increased authenticity of the time stamp ... [and one skilled in the art] would have realized that such a binding of the computed age is necessary in order to produce future synchronization between the two times of the different clock." *Office Action dated June 4, 2004*,

p. 5, ¶1[1]. This alleged motivation is no more than a conclusory statement by the examiner, and is contradicted by the cited references. None of the references, alone or in combination, support such an assertion.

Indeed, both Nissl and Stefik alone already teach "a means of synchronizing between different clocks." They do not need to be combined with any of the other alleged references to teach this fact. Further, both Nissl and Stefik explicitly disclose using clock synchronization to make decisions, not to increase the authenticity of a time-stamp. Particularly, Nissl uses the time difference to decide whether to incorporate a time indication in the time-stamp, while Stefik uses the time difference to decide whether to continue or abort a transaction. Haber, which is silent on clock synchronization, discloses using a sequence of absolute times to fix a document in a continuum of time. None of these teachings say anything regarding clock synchronization as a means to "increase the authenticity of a time-stamp" as theorized by the Examiner.

Additionally, none of the references ever hint at the Examiner's belief that, "binding the computed age is necessary in order to produce future synchronization between the two times of the different clock." Binding as used in both the Nissl and Haber patents means encrypting the time-stamp receipt (e.g., with a cryptographic key). Stefik never says anything about binding. How encryption is necessary to produce further synchronization is unclear, as it is not discussed in any of the references. Nor is it discussed in any detail the Office Action. This sort of conclusory, unsubstantiated assertion disguised as a motivation to combine simply is not permitted under the law.

The Examiner must provide "an explanation based on logic and sound scientific reasoning that will support a holding of obviousness." *Ex parte Levengood*, 28 USPQ2d 1300, 1301 (Bd. Pat. App. & Inter. 1993) (emphasis added).

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[1] Applicant notes that the cited portion of the Office Action appears in the Non-Final Office action dated June 4, 2004. However, in the Final Office Action dated December 1, 2004, the Examiner does not allege a different motivation to combine, but instead, merely applies the same §103 rejection for the same reasons set forth in the previous Office Action. See Final Office Action dated December 1, 2004, p. 2, ¶4.

> To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985) (emphasis added), *See also*, MPEP § 2142 ("The examiner bears the initial burden of factually supporting any prima facie case of obviousness) (emphasis added). The references do not support the Examiner's reasoning, and as such, the alleged motivation to combine the references falls far short of what is required under the law. Accordingly, the §103 rejection fails as a matter of law.

Claim 14

Claim 14 is also directed to a method for time-stamping a digital document at a trusted outside agency. For reference, claim 14 appears below.

> 14. A method for time stamping a document comprising:
> creating a time stamp receipt including identifying data associated with said document and a time indication;
> transmitting said time stamp receipt to an outside agency for certification;
> computing the age of said time stamp receipt at said outside agency;
> creating an aged time stamp receipt at said outside agency by combining said identifying data, said time indication and said computed age; and
> binding at said outside agency said identifying data, said time indication, and a digital representation of said age using a cryptographic binding scheme to create an aged time stamp receipt.

The Examiner also rejected claim 14 under 35 U.S.C. §103(a) as being unpatentable over Nissl in view of Haber and in further view of Stefik. Claim 14, however, also calls out that the outside agency computes an age value based on a time indication received in a first time-stamp receipt, and then uses the computed age value and the received time indication to create and bind a subsequent aged time-stamp receipt. Therefore, for reasons similar to those stated above, Nissl, Haber, and Stefik, alone or in combination, fail to teach or suggest claim 14.

In addition, claim 14 recites, "transmitting [the] time stamp receipt to an outside agency for certification." As stated above, the time-stamp receipt includes both data identifying the

document and a time indication. The time-stamp receipt is transmitted by the entity seeking certification to the outside agency to be certified. Indeed, neither Nissl nor Stefik ever suggest an outside agency, let alone transmitting a time-stamp receipt to an outside agency for certification. Nissl discloses communications between two transceivers and Stefik discloses communications between two repositories. None of these qualify as trusted outside agencies that will certify a digital representation of a document. The only reference that discloses the use of a trusted outside agency is Haber. According to Haber, however, the outside agency never receives a time indication from the person sending the time-stamp receipt for certification. Rather, Haber receives only an identifier and a digital representation of the document from the document author. According to Haber, all time indications are added to the time-stamp receipt after the outside agency receives the request for certification. Accordingly, the §103 rejection of claim 14 necessarily fails as a matter of law.

Conclusion

For the reasons set forth above, none of the references, alone or in combination, teach or suggest computing an age value from a time indication received in a time-stamp receipt, and then using the computed age value and the received time indication to create a subsequent time-stamp receipt as recited in the claims. Moreover, the alleged motivation to combine is conclusory and unsupported by the cited references, and as such, falls far short of the legally sufficient motivation required under the law. Accordingly, all claims 1-26 being appealed herein are patentable over the cited art.

Respectfully submitted,

COATS & BENNETT, P.L.L.C.

Dated: April 11, 2005

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(8) CLAIMS APPENDIX

1. A method for time stamping a document comprising:

receiving a time stamp receipt at an outside agency, said time stamp receipt including identifying data associated with said document and a time indication;

computing the age of said time stamp receipt based on said time indication;

creating an aged time stamp receipt at said outside agency by combining said identifying data, said time indication and said computed age; and

binding at said outside agency said identifying data, said time indication, and a digital representation of said age using a cryptographic binding scheme to create an aged time stamp receipt.

2. The time stamping method of claim 1 further including transmitting said aged time stamp receipt and binding information generated during said binding operation to a designated party.

3. The time stamping method of claim 1 wherein said identifying data comprises a digital representation of at least a portion of said document.

4. The time stamping method of claim 3 wherein said identifying data comprises a digital sequence derived by application of a deterministic function to at least a portion of said document.

5. The time stamping method of claim 4 wherein said digital sequence is a hash value derived by application of a one-way hashing function to at least a portion of said document.

6. The time stamping method of claim 1 wherein said time stamp receipt further includes an identification number associated with the document originator.

7. The time stamping method of claim 6 wherein said time stamp receipt further includes a sequential record number.

8. The time stamping method of claim 7 further including the step of validating said time stamp receipt at said outside agency.

9. The time stamping method of claim 8 wherein the step of validating said time stamp receipt includes comparing said identification number and sequential record number with data maintained by the outside agency.

10. The time stamping method of claim 1 wherein said binding step includes signing a combination of said identifying data, said time indication, and said digital representation of said age using a digital cryptographic signature scheme.

11. The time stamping method of claim 1 wherein said binding step includes computing a message authentication code on a combination of said identifying data, said time indication, and said digital representation of said age using a secret key controlled by said outside agency.

12. The time stamping method of claim 1 wherein said binding step includes computing a hash value on a combination of said identifying data, said time indication, and said digital representation of said age.

13. The time stamping method of claim 1 wherein said binding step includes encrypting a combination of said identifying data, said time indication, and said digital representation of said age using a secret key controlled by said outside agency.

14. A method for time stamping a document comprising:

creating a time stamp receipt including identifying data associated with said document and a time indication;

transmitting said time stamp receipt to an outside agency for certification;

computing the age of said time stamp receipt at said outside agency;

creating an aged time stamp receipt at said outside agency by combining said identifying data, said time indication and said computed age; and

binding at said outside agency said identifying data, said time indication, and a digital representation of said age using a cryptographic binding scheme to create an aged time stamp receipt.

15. The time stamping method of claim 14 further including transmitting said aged time stamp receipt and binding information generated during said binding operation to a designated party.

16. The time stamping method of claim 14 wherein said identifying data comprises a digital representation of at least a portion of said document.

17. The time stamping method of claim 16 wherein said identifying data comprises a digital sequence derived by application of a deterministic function to at least a portion of said document.

18. The time stamping method of claim 17 wherein said digital sequence is a hash value derived by application of a one-way hashing function to at least a portion of said document.

19. The time stamping method of claim 14 wherein said time stamp receipt further includes an identification number associated with the document originator.

20. The time stamping method of claim 19 wherein said time stamp receipt further includes a sequential record number.

21. The time stamping method of claim 20 further including the step of validating said time stamp receipt at said outside agency.

22. The time stamping method of claim 21 wherein the step of validating said time stamp receipt includes comparing said identification number and sequential record number with data maintained by the outside agency.

23. The time stamping method of claim 14 wherein said binding step includes signing a combination of said identifying data, said time indication, and said digital representation of said age using a digital cryptographic signature scheme.

24. The time stamping method of claim 14 wherein said binding step includes computing a message authentication code on a combination of said identifying data, said time indication, and said digital representation of said age using a secret key controlled by said outside agency.

25. The time stamping method of claim 14 wherein said binding step includes computing a hash value on a combination of said identifying data, said time indication, and said digital representation of said age.

26. The time stamping method of claim 14 wherein said binding step includes encrypting a combination of said identifying data, said time indication, and said digital representation of said age using a secret key controlled by said outside agency.

(9) EVIDENCE APPENDIX

There is no further evidence not contained in the prosecution history.

(10) RELATED PROCEEDINGS APPENDIX

There are no related proceedings.